

Matanuska-Susitna Borough



Community Wildfire Protection Plan

2007

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Executive Summary

The Matanuska-Susitna Borough (MSB) is one of the fastest growing regions in the State of Alaska. The population boom has caused significant increase in new construction for both homes and business, resulting in a rapidly growing wildland-urban interface (WUI). Wildfire risk has increased in recent years due to increased human activities, spruce bark beetle infestation, and climatic changes that have led to warmer, drier summers. While the MSB government has been working to protect individuals, communities and properties through FireWise and Hazard Fuel Reduction programs, a need for improved collaboration and the establishment of Community Wildfire Protection Plans (CWPPs) has become a top priority. To grow accustomed to the CWPP process and develop the methodology necessary for developing future community level CWPPs, it was decided a MSB umbrella (area wide) CWPP would be a logical first step, with more community specific plans developed later. The MSB community has experienced first hand the devastation of a catastrophic wildfire (Miller's Reach Fire - 1996) and as a result this is a highly motivated effort intended to galvanize community members, property owners and government agencies against the threat of wildfires.

Introduction

The MSB is approximately 25,000 square miles in size, roughly the size of the state of West Virginia. It includes 3 incorporated cities and 24 individual community council areas. Only about 1% of the MSB is populated¹, with the most densely populated region located in the southcentral portion of the borough. This area is often referred to as “the core” and includes the cities of Wasilla, Palmer, and Houston plus several surrounding community council areas. The remaining borough population spreads out from this core area along two major corridors; the north-south George Parks Highway and Alaska Railroad corridor and the east-west Glenn Highway corridor. A very small portion of the population is located along major river corridors. See **Appendix 1** for a map of the MSB.



Figure 1 – MSB Hardwood and Spruce Forest

¹ Matanuska-Susitna Borough GIS

The majority of wildland fires that occur in the MSB are human caused and most of these fires are located within the WUI. These fires have the potential to threaten life and property because of their proximity to habitation. The Alaska Interagency Fire Management Plan has mapped all areas in the MSB into one of four fire protection designations or levels; Critical, Full, Modified or Limited. See **Appendix 2** for a table describing the different levels and a map of the MSB fire protection designations.

Only a small portion of burnable land in the MSB is designated as either Modified or Limited and very few fires are ignited in these regions. From 1990-2006, only 35 of 1,847 wildfires in the MSB were managed as one of these two lower priority categories. Instead the majority of wildfires were managed as Critical or Full priority wildfires, with 1,583 fires in the former and 229 fires in the later category.²

Over the past two decades, the MSB has experienced significant population growth in the core area. The MSB population grew by 18 percent between 2000 and 2004, compared to 5 percent statewide and 7 percent in Anchorage. The fastest growth (Table 1)³ has occurred in the Knik-Fairview, Fishhook, Tanaina, Meadow Lakes and Gateway Community Council areas. In regions with the heaviest population growth, land that has historically been covered with native, undisturbed forest regimes (including regions of dense black spruce) is quickly being converted into wooded subdivisions and business properties. As more development occurs, the WUI continues to grow, increasing the number of individuals and structures at risk of being impacted by wildfire.

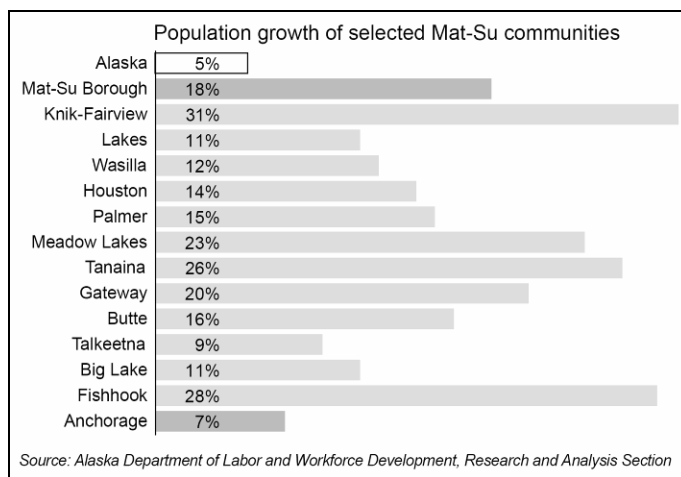


Table 1 - MSB Population Growth

Fire risk has also increased in recent years due to spruce bark beetle infestations which have affected both white and black spruce forest stands. These infestations have impacted in an estimated 309,746 acres (nearly 500 sq/mi) of spruce forest in the MSB.⁴ Dead and dying spruce trees present a wildfire hazard when standing because they can support intense, rapidly moving crown fires. These insect-killed trees also present a hazard after they have fallen because they can support very intense surface fires. Wildfire in either fuel type is very difficult for firefighters to control by direct attack.

² State of Alaska Division of Forestry (AK-DOF), 1990-2006 fire starts dataset

³ Table 1 from Alaska Department of Labor, *Alaska Economic Trends*, Dec 2005, pg. 6

⁴ Calculated from GIS data developed by USDA - State & Private Forestry and AK-DOF

Community Background

Location

The MSB lies in the heart of southcentral Alaska (Figure 2), encompassing roughly 25,000 square miles of rolling low lands, mountains, lakes, rivers, and streams. It is bordered on the north and west by the Alaska Range, to the east by the Talkeetna Mountains, to the south-east by the Chugach Mountains and to the south by upper Cook Inlet and Knik Arm. The southern border also lies adjacent to the Municipality of Anchorage, Alaska's largest urban area.



Figure 2 – State of Alaska / MSB

History

The first people to arrive in Alaska came across the Bering Land Bridge nearly 20,000 years ago. When European contact occurred, around 260 years ago, the Athabascan Dena'ina (aka Tanaina) Indians were settled in southcentral Alaska including the region now known as the MSB. In 1867, the United States purchased Alaska from Russia which had claimed it as its own during the 1700's. The Klondike Gold Rush brought thousands of prospectors and entrepreneurs to Alaska in the late 1800's and early 1900's. Gold was discovered in the Hatcher Pass area of the MSB in the early 1900's and it, along with coal mining and the construction of the Alaska Railroad helped grow and sustain the local population. During the Depression a U.S. government *New Deal* program brought a group of farmers to the Palmer area in an effort to establish an agricultural region in southcentral Alaska. World War II brought the next population boom with millions of dollars spent on the Alaska-Canada Highway and the build-up of military bases and infrastructure in Alaska due to its close proximity to Japan. Construction of the regional road system and continued farming efforts spurred population growth in the MSB though



Figure 3 - MSB Farm Land

the 1950's and 1960's. Alaska became the 49th State of the Union, in 1959. The 1970's brought significant population growth and an economic boom to the entire state due to the building of the 800 mile long Trans-Alaska pipeline. Today, the MSB is rapidly changing and has the fastest growing population and economy in the state; however, traditional lifestyles such as farming (Figure 3), gold mining and subsistence living continue in certain parts of the region.

Demographics

The following figures are all from 2000 U.S. Census data unless otherwise noted.

Population⁵ – 77,174

Race - 87.6% white; 8.6% Alaska Native or part Native; 2.5% Hispanic and 1.3% other

Gender - 52% male and 48% female

Age - 34% under 19 yrs old; 60% between 20-65 yrs old; 6% over the age of 65 yrs

Total housing units - 27,329

Vacant housing units - 6,773

Vacant housing units seasonally used - 5,244

Residents employed - 25,356

Unemployment rate - 10.3% for those seeking work

Adults not in the work force - 41%

Median household income - \$51,221

Per capita income - \$21,105

Residents living below poverty level - 11.01%

Economy

According to the December 2005 issue of *Alaska Economic Trends*, “The Matanuska-Susitna Borough’s economic indicators all tell the same story: They describe the fastest growing area in the state. Growth measures including employment, population, business formation, in-migration, highway counts and new homes being built all point to the Mat-Su Borough. In fact, it’s the only area in the state where the term “booming” is applicable.” The MSB economy is diverse, and residents are employed in a variety of retail, professional services, city, borough, state and federal occupations. Top employers are the MSB School District, Mat-Su Regional Medical Center, Wal-Mart, Fred Meyers Stores, Safeway, Matanuska Telephone Association and the Matanuska-Susitna

Borough.⁶ MSB residents supply a significant workforce to other portions of the state with 34% of the labor force commuting to Anchorage for employment and another 11% commuting elsewhere in the state (Table 2)⁷. Due to the significant population that commutes for work, the MSB is one of the few parts of the state that has a positive net inflow of income. This means that while a large percentage of the workforce travels outside the MSB for employment, the majority of their earnings are invested or spent within the MSB.

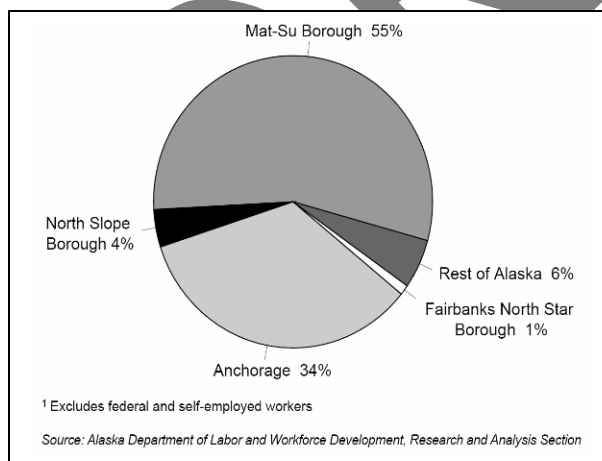


Table 2 - Where MSB Residents Work

⁵ Department of Commerce, Community, and Economic Development 2006 MSB certified population

⁶ “The Mat-Su Borough – Big growth in the Valley”, *Alaska Economic Trends*, pg. 15

⁷ Table from Alaska Department of Labor, *Alaska Economic Trends*, Dec 2005, pg. 5

Critical Facilities

In the MSB, facilities are considered critical if they are necessary for the health and welfare of the community particularly during disaster response and recovery. Critical facilities include hospitals, health clinics, law enforcement offices, fire and ambulance stations, and emergency dispatch centers (Figure 4). Most schools, senior centers and community centers are critical due to their designation as emergency shelters in the MSB Emergency Operations Plan. Critical transportation systems include



Figure 4 - Palmer Emergency Dispatch

airports and airstrips, highways, railways, bridges, ferry terminals and docks. Utility systems for water, electricity and natural gas are essential, as are sources of heating fuel. Communication towers and fiber optic systems for telephone, cell phone, radio and television transmission are also critical. Military installations and hazardous material facilities also fall within the definition of critical. Facilities vital to the local economy and for providing supplies include shopping centers, manufacturing facilities and warehouses. Correctional detention centers are important for securing the inmate population. Historic and cultural assets also require special considerations. **Appendix 3** shows a preliminary list of critical facilities in the MSB. Individual CWPPs developed specifically for each community council area will include a more comprehensive list of critical facilities.

Transportation

The George Parks and Glenn Highways, as well as the state-owned Alaska Railroad provide the primary transportation routes to, from and across the MSB. The railroad line runs roughly parallel to the George Parks Highway with a short and rarely used spur to the City of Palmer. Efforts are underway to develop an additional rail-line between Point MacKenzie and Willow.

Commercial airlines serve the Ted Stevens International Airport located in nearby Anchorage. Across the MSB there are dozens of private and public airstrips for small wheeled planes as well as thousands of lakes that allow float plane landings.

Plans to provide a transportation link across a 2 mile stretch of Knik Arm, between Point MacKenzie and the City of Anchorage, are in full swing with a ferry terminal nearly completed and a passenger/vehicle ferry and landing dock under construction. There is also a proposal to build a vehicular bridge connecting these two areas.

Planning Process

The planning process described in *Preparing a Community Wildfire Protection Plan – A Handbook for Wildland – Urban Interface Communities* was used for the development of this CWPP. That process involves the following steps.

- Step One: Convene Decision Makers
- Step Two: Involve Federal Agencies
- Step Three: Engage Interested Parties
- Step Four: Establish a Community Base Map
- Step Five: Develop a Community Risk Assessment
- Step Six: Establish Community Priorities and Recommendations
- Step Seven: Develop an Action Plan and Assessment Strategy
- Step Eight: Finalize Community Wildfire Protection Plan

Convene Decision Makers, Involve Government Agencies and Engage Interested Parties

Core Team

The core team responsible for developing the MSB umbrella CWPP includes representatives from: MSB Department of Community Development – Land and Resource Management, MSB Department of Emergency Services, MSB Department of Planning and Land Use, MSB Office of Information Technology – Geographical Information Systems (GIS), the State of Alaska – Division of Forestry (AK-DOF), and Sanders Forestry Consultant.

Collaborators

The following listed collaborators received a copy of the draft MSB umbrella CWPP and were asked to submit comments, concerns and/or corrections: MSB Fire Chiefs Association and the Local Emergency Planning Committee (LEPC).

Potential Stake Holders

Potential stake holders include government agencies, business and property owners, tribal entities, non-profits and/or community members who may be interested in or who may be asked to participate in CWPP goals and objectives. They include but are not limited to: AK Department of Transportation (ADOT); AK-DOF; AK Fish and Wildlife (ADF&G); AK Mental Health Trust Authority (AMHTA); AK Railroad; AK State Parks; Alexander Creek Inc; Bureau of Indian Affairs (BIA); Bureau of Land Management (BLM); Chickaloon Moose Creek Native Assn.; Chickaloon Village Traditional Council; City of Houston; City of Palmer; City of Wasilla; Cook Inlet Regional Inc. (CIRI); Eklutna Inc.; Enstar; Knikatu Inc.; Matanuska Electric Assn.(MEA); Matanuska Telephone Assn.(MTA); Montana Creek Native Assn.; MSB; MSB Community Councils; National Park Service (NPS); Natural Resources Conservation Service (NRCS); Palmer Soil and Water Conservation District; University of Alaska (UofA); US Dept. of Agriculture Forest Service (USFS); US Dept of Agriculture State and Private Forestry.

Community Involvement

In 2002, during the development of the MSB All-Hazards Mitigation Plan, a survey was conducted to assess attitudes, concerns, and recommendations about hazard vulnerability and mitigation strategies, including wildfire. The survey was mailed to a target population consisting of registered MSB voters who voted in the August 2002 primary election. The budget allowed for a mailing to 8,000 addresses, sent randomly to members within every community council in the borough. A total of 1,848 completed surveys were returned. This survey showed that out of the 15 hazards listed, wildfire ranked very high in terms of public concern, with 38.19% of respondents stating they were *very concerned* and 36.96% being *somewhat concerned* about wildfire directly affecting their local community. In addition, respondents were asked if they supported specific wildfire mitigation measures, with 77.60% responding *yes* in favor of creating firebreaks, 76.80% in support of the promotion of FireWise building practices and 81.12% in favor of the removal of spruce bark beetle killed trees. Some of the survey results are available in **Appendix 4**.

Government agencies, business and property owners, tribal entities, non-profits and community members will be asked to participate in assessment, planning and decision making during the development of individual CWPPs.

Establish a Community Base Map

Community Wildfire Protection Plan Boundary

Since this plan is intended to be an umbrella plan for the entire MSB, the CWPP boundary is the MSB boundary. After this umbrella plan is approved, individual CWPPs will be developed for the 3 city and 24 community council areas (see **Appendix 5** for a map). Populated areas that fall outside of community council boundaries will either be grouped with an adjacent community council area or have its own CWPP; this decision will be based on community needs, population, fuel types, topography, and other relevant information.

WUI Boundary

The WUI boundary established for this umbrella CWPP is based on recommendations from the Healthy Forests Initiative and Healthy Forests Restoration Act Interim Field Guide. It was determined that MSB community council boundaries would not be used for developing the WUI boundary since they often include large segments of land that are uninhabited. Instead, all parcels with at least one assessed structure were buffered ½ mile and minor irregularities were corrected. The core team reviewed a map of this buffered area and determined that it would suffice as an initial WUI boundary. This boundary is not final and as individual CWPPs are developed this boundary will likely be modified based on specific community conditions and concerns. A map of the WUI can be viewed in **Appendix 6**.

Community Wildfire Risk Assessment

Fire in Alaska⁸

Fire is an essential part of the ecology of the spruce forests in Alaska and is the primary agent of change in northern boreal forests. Fires, along with floods, are responsible for optimal spruce and birch regeneration in southcentral Alaska. Both the black and white spruce depend on ground fire to clear organic layers and expose mineral soil seedbeds. Black spruce is at least partially dependent upon stand replacement fires because the seeds are released when the cones are opened by heat from a fire. Without fire, organic matter accumulates and ecosystem productivity declines; vegetation communities become much less diverse and wildlife habitat quality decreases. Fire rejuvenates these natural systems and processes. It removes insulating organic matter and elicits a warming of the soil, enhancing productivity. Nutrients are added both as a result of combustion and by increased decomposition rates due to warming caused by greater exposure to solar radiation. Outbreaks of tree-killing insects are a natural characteristic of boreal forests like those in the MSB and also promote many important ecological processes. Although vulnerable tree species and age classes must be present for insect outbreaks to occur, climatic events are often the trigger of the insect population increases and subsequent tree mortality.

Natural fire cycles and the diversity of forest age classes have been modified through wildfire suppression activities for over five decades in Alaska. This has resulted in large



Figure 5 – 2007 Su River Fire

continuous fuel types associated with extreme fire behavior. By prescribing timber harvesting and managed fuel reduction treatment, forest managers can provide a diversity of vegetation and timber types that contain a range of age classes, approximate natural stand replacement mechanisms and forest successional processes, provide a variety of wildlife habitats and reduce the risk of catastrophic wildfire.

⁸ Much of the History of Fire in Alaska paragraph was originally compiled by the Kenai Peninsula Borough and used with permission.

Fire History in MSB

From 1990 to 2006 the MSB experienced 1,847 wildfires that burned over 43,000 acres. Eleven of these fires were over 100 acres in size, the largest of which was over 37,000 acres and is described in more detail below. The majority of the wildfires, 96%, were human caused, 3% were caused by lightning and 1% had unknown causes. The human caused wildfires most often started from trash burning, land clearing, children playing with fire, slash burning, debris burning and campfires.⁹ A complete table of fire causes and counts can be found in **Appendix 7**.

The largest and by far most destructive wildfire started in June 1996. This wildfire started near the City of Houston on Millers Reach Road and spread rapidly due to dry, warm, and windy conditions. The fire, which came to be known as the Miller's Reach Fire, destroyed 344 structures and burned over 37,000 acres in the Houston-Big Lake area. Alaska Governor Knowles issued a State Disaster Declaration and President Clinton signed the Federal Disaster Declaration (AK- 1119-DR) which provided the State with Federal Disaster relief funding for the incident. As a result of the actions taken by fire responders, there were no human casualties and over 1000 structures were saved. The fire suppression effort cost \$16.5 million, commercial structure loss amounted to \$9.2 million, residential structure and personal property loss (not counting land depreciation) was \$51.1 million, public utility companies lost 1.2 million in infrastructure and Alaska Native corporation landowners lost \$250,000 in commercial timber.¹⁰



Figure 6 - 1996 Millers Reach Fire

Not yet included in the AK-DOF Fire Starts dataset is the MSBs second largest recent fire, the Su River Fire #301, which occurred in June of 2007. This wildfire was started by lighting and consumed nearly 8,500 acres. Fortunately, it was located in a sparsely populated area and all of the 21 structures that were directly threatened were saved. The fire suppression cost was \$2.5 million.

Another recent fire of significance was the Point MacKenzie Mile 5 Fire #108 in 2006. Started by an arcing power line, the fire burned 461 acres and destroyed 3 structures. One structure directly threatened was saved. Total fire suppression cost was \$780,000.

⁹ AK-DOF Fire Starts Dataset 1990-2006

¹⁰ Nash, Charles E. and Associates and J. Duffy. 1997. Miller's Reach Fire Strategic Economic Recovery Plan: Final Revised Plan. Matanuska-Susitna Borough Department of Planning, October



Figure 7 - Grass Fire

Fire Season / Weather Patterns

Historically, May and June have been the most active months for wildfires in southcentral Alaska; however starting in 2007, the official start of the fire season was changed from May 1 to April 1 due to the frequency of earlier fire starts in recent years. During the official fire season, AK-DOF burn permits are required for open burning and recommended for burn barrels in areas that allow these activities.

In spring, the previous year's dead grasses and other non-woody vegetation is exposed by melting winter snow and dried by longer daylight hours and wind. Before new vegetation has grown enough to "green up", these flashy or fast burning fuels (figure 7), combined with warmer temperatures and dry conditions, often create higher fire danger levels and "Red Flag Alerts". After spring "green-up" the fire danger in the grass model subsides and wildfire concern shifts to the ignition potential of black spruce fuels. July and August are wetter months with August being the wettest month of the year, but in recent years, summers have been drier with more fire starts in these months than historically. Most of the large wildland fires in the MSB have occurred in the dense black spruce forest types and are often associated with windy conditions.

Hazard Fuels and Wildfire Risk Assessment

In 2004, the MSB in cooperation with the AK-DOF and private forestry consultants began vegetation (fuel) mapping, wildfire hazard and risk assessment, the development of public safety and education strategies and fuel reduction projects to protect life, property and essential infrastructure from the threat of wildfire.

Fire hazard assessment is based on prediction of fire behavior, intensity and the likely effectiveness of fire suppression tactics. Fire hazard assessment involves analysis of fuel types and topography (slope and aspect). Fire risk, or ignition potential assessment is based on the probability a fire could occur, historic fire starts data, local knowledge of land uses and weather patterns. In the MSB, hazard level determinations are supported by photo interpreted vegetation types (fuels), site specific field observations, fire behavior modeling conducted by state and federal wildfire specialists, and wildfire data compiled by AK-DOF.

Predicting potential wildfire behavior and its effects are important tasks of wildfire management. Information regarding fuel properties, fire behaviors, and fuelbed data are used to formulate surface fire spread models and to predict fire intensity. Different kinds of fire models are used in fire science. The criteria for choosing a fuel model includes the fact that the fire burns in the fuel stratum best conditioned to support the fire. Fuel models used for determining fire hazard and risk within the MSB include the standard 13 Anderson Fuel Models tabulated by Rothermel (1972) and Albini (1976) and the

associated 20 National Fire Danger Rating System (NFDRS) fuel models. The standard 13 Anderson Fuel Models represent severe fire behavior posing greater control problems and most accurately describe the potential for extreme fire conditions. The selection of fuel models is limited to fuel groups represented by Anderson and NFDRS to maintain a reasonably simple procedure for field use situations based on observation and local fire history.

Since the MSB has chosen to initiate implementation of projects prior to fully developing a supportive GIS data structure, an interim methodology to evaluate and prioritize projects has been necessary. Research and analysis of assessment methodology used by other wildfire mitigation programs, including the Kenai Peninsula Borough and the Municipality of Anchorage, was examined to help develop the MSB Fuel Reduction Project Priority Assessment Form. This form is used to evaluate and prioritize projects on a weighted scale. Evaluations are based on existing resource data and field analysis. This method numerically evaluates four main components; fire hazard, fire risk, values at risk and project effectiveness, that are commonly found in other fire mitigation program assessments with the addition of a project effectiveness rating to qualify priority projects

A project assessment form is used to help analyze variables within a half-mile radius of each proposed hazard fuel reduction project. Variable attributes were limited in scope to those with metrics that could be analyzed and quantified given the current level of base information available. As additional base information is compiled it can be used to further refine the assessment form analysis.

Current Wildfire Hazard Mitigation Efforts

Managed Hazard Fuel Reduction

The Fuel Reduction Program is managed by the MSB Land and Resource Management Division. The goal of the program is to reduce the threat of wildfire by providing 400 plus acres of managed fuel reduction treatment per year on both private and public lands across the MSB while generating economic opportunities for the private sector through competitive bids for cutting contracts.

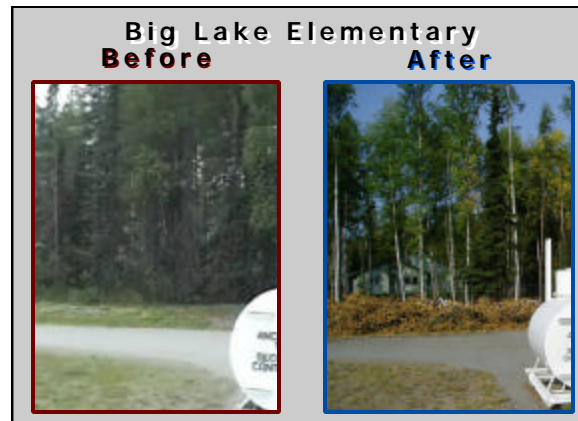


Figure 8 - Before/After Hazard Fuel Reduction

Fuel reduction lowers fire intensity, enhances control efforts and reduces the threat of wildfire to identified values at risk. Treatment typically occurs along road corridors, heavily wooded land adjacent to subdivisions and around important public facilities like schools, airports and fire stations.

Fuel reduction includes cutting and chipping of hazardous forest fuels, typically dense black and white spruce stands, including trees killed by insects, disease and fire. Cutting prescriptions include fully cleared fire breaks and partial cuts that leave the hardwood

component of the forest standing. Partial cuts are prescribed whenever possible because they provide an aesthetically pleasing, park-like clearing, while still providing fire safety.

Individual fuel reduction projects are either mechanical treatments or manual treatments. Mechanical treatment projects are completed using heavy machinery including track and wheel mounted equipment. These projects are bid on by the private sector and the contracts are administered by the MSB Land Management Division. Manual fuel reduction projects are accomplished by hand labor provided by one or more wildland firefighting crews under a cooperative agreement between the MSB and AK-DOF. Projects are administered by the MSB Land Management Division and AK-DOF, working closely with private forestry consultants.

To date individual fuel reduction projects have been identified, planned, and accomplished based on fire hazard and risk assessments performed on a prioritized basis. The success of the program is a result of collaboration between communities, individual property owners, various agencies, fire crews and contractors. As of September 2007, thirty fuel reduction projects have been completed for a total of 329 treated acres and an additional 22 projects are proposed or in progress for an additional 574 treated acres.

Fire Wise – Public Education on Structural Ignitability and Defensible Space

The FireWise Program is managed by the MSB Department of Emergency Services and is tasked to educate the public on FireWise concepts. Concepts of the home ignition zone, defensible space, ignition proofing structures, and fire resistant vegetation are brought to homeowners during home visits, as well as in small group presentations to clubs, community councils, homeowner association meetings, etc. Staff members are available to provide free wildfire risk ratings to individuals across the borough. The information provided comes from the national FireWise program, as well as from the Alaska Wildland Fire Coordinating Group, a coalition of local, state and federal agencies.



FireWise Communities USA is part of the National Wildland/Urban Interface Fire Program, which is directed and sponsored by the Wildland/Urban Interface Working Team (WUIWT) of the National Wildfire Coordinating Group. It is intended to reach beyond the fire service by involving homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire - before a fire starts. The FireWise Communities approach emphasizes community responsibility for planning safe communities as well as effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance.

As of August 2007, six hundred and twenty-three site visits had been completed and the Horseshoe Lake area was designated as Alaska's first official FireWise USA Community in 2006.

GIS Data Development and Analysis

Most wildfire mitigation programs in Alaska and elsewhere have developed, collected, and compiled resource data into a GIS database to assess fire hazard, fire risk and values at risk over large geographic areas. These datasets are used to identify and prioritize values at risk and aid in identifying areas of concern that would benefit from wildfire mitigation projects. These datasets require considerable input, time and expense to complete.

The MSB GIS Division, in cooperation with MSB Land and Resource Management Division, MSB Department of Emergency Services and forestry consultants, has developed and is continuing to develop GIS datasets that are important for wildfire mitigation efforts; including a data set of all fuel reduction project locations and another for the majority of FireWise site visits. High resolution vegetation mapping is underway with over 180,000 acres mapped into a GIS dataset. The Fuel Reduction Program relies most heavily on GIS data development and analysis; specifically for the conversion of hardcopy vegetation mapping into a digital dataset, determination of the number of acres affected by each fuel reduction project and the development of public notice maps.

The vegetation data, when completed, will be used to help determine which areas in the MSB have the highest wildfire hazard and risk, particularly in the WUI. This information will help the MSB prioritize areas for new fuel reduction projects and help the public better understand which regions have the highest fire hazard and risk.

Local Firefighting Capacity – Emergency Preparedness

By Alaska Statute, the AK-DOF has fire protection responsibility for state, private, and municipal lands, whereas the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS) and the U.S. Forest Service (USFS) have legal responsibility for fires on federal lands. However, the AK-DOF has a contractual agreement with the BLM Alaska Fire Service, under which the federal government

provides wildland fire protection on state and private lands in the northern half of Alaska in exchange for the state protecting federal jurisdiction and Native lands in the southern half of Alaska. By utilizing cooperative agreements, the fire management agencies fight fires within their designated areas on all land ownerships. This tactic reduces response time and duplication of facilities and services, thereby increasing safety, efficiency, and



Figure 9 – DOF-AK Retardant Drop

cost effectiveness. The AK-DOF also has cooperative agreements with numerous local government and volunteer fire departments.



Figure 10 - MSB Emergency Response Resources

In the MSB, the AK-DOF is based in the City of Palmer and shares a cooperative agreement with the MSB, the City of Palmer, and the City of Houston to provide wildland fire protection through a unified command system. Any response outside the MSB fire service areas must be authorized by the MSB Director of Emergency Services on a case by case basis. The AK-DOF is

directly responsible for all wildland fires on state, private and municipal lands outside these fire service areas and has joint responsibility with the MSB inside these fire service areas. State and local initial attack resources for the MSB are listed in **Appendix 8**.

MSB on-call responder firefighters provide fire protection in 11 fire service areas. The fire departments of the City of Palmer and the City of Houston provide fire protection within their city limits and have mutual aid agreements with the MSB. A map of the 11 fire service areas and city fire department is shown in **Appendix 9**. The primary function of all fire departments is structural protection with some limited fire responses as a supporting role with the AK-DOF. The MSB also provides borough-wide emergency medical services.

Homeowners who live outside fire service area boundaries need to be extremely proactive in their landscaping decisions, development of defensible space, building construction materials and fire use habits. “How fast can my house run?” is a question that all residents should ask themselves when considering the effects of wildfire. Individuals must take personal responsibility to create defensible space and ember proof their homes. While national standards for defensible space recommend a 30 foot buffer of defensible space, it should be remembered that this is a *minimum*, and very topographically dependant. Special care should be taken to build or retrofit structures with fire resistant and fire proof materials so that any wildfire with its blowing embers does not erase all the owner has labored to build.

Creating defensible space and posting address numbers, among other things, helps firefighting responders be more effective in defending homes if preparation is done *before* an event.

Community Priorities and Recommendations

The priorities and recommendations below are from the 2004 MSB All-Hazards Mitigation Plan and represent a collaborative effort by MSB Emergency Services, Land and Resource Management, Planning, and Public Works, plus the cities of Houston, Palmer, and Wasilla. Many recommendations have already been or are in the process of being implemented while others have not yet been focused on or are in need of revision. Individual CWPPs will address community specific priorities and recommendations.

Priority 1: Reduce the fire danger in the wildland urban interface

Recommendation 1.1: Support the Wildfire Fuel Reduction Program

- Identify areas of fuel loading in the wildland/urban interface
- Clear hazard trees in proximity to homes in partnership with AK-DOF and private sector businesses and land owners
- Establish a means for homeowners to dispose of cleared brush in cooperation with the MSB landfill and transfer sites

Recommendation 1.2: Qualify MSB communities as FireWise communities

- Bring the concept of defensible space to every subdivision in the MSB
- Assist homeowners in clearing fire hazards from around their homes
- Create demonstrations of FireWise landscaping at public buildings

Recommendation 1.3: Sensitize children to wildland fire issues

- Develop a partnership with the School District
- Reinforce concepts of FireWise through summer library programs and non-traditional learning opportunities

Priority 2: Improve the fire suppression capability of Borough firefighters

Recommendation 2.1: Assure sufficient resources are available

- Continue Borough Assembly appropriations to support necessary fire suppression capabilities throughout the MSB, including areas outside fire service districts
- Continue recruitment of responders
- Continue training and exercise activities on all levels
- Continue researching and applying for grant support

Recommendation 2.2: Assure access to water sources and ingress/egress routes for fire equipment and for the public.

- Support engineering study of dry hydrant system
- Identify and improve alternate road access for fire suppression equipment
- Require that subdivisions have more than one entry road

Priority 3: Use the Borough Assembly's legislative power to institutionalize fire mitigation measures in MSB code

Recommendation 3.1: Encourage development of a borough building code.

- Adopt fire safety building standards for materials and construction

Recommendation 3.2: Eliminate the sale and use of fireworks in the Borough.

- Enforce borough code banning fireworks
- Increase signage and advertising to alert the public to the illegality and danger of fireworks

Action Plan and Assessment Strategies

Information gathered through community meetings for the All-Hazards Mitigation Plan and 2006 Horseshoe Lake CWPP in addition to other work done by the MSB and the AK-DOF has identified preliminary action plan ideas (listed below) for emergency preparedness, public education, and hazard fuel reduction. When individual area CWPPs are developed, community participants and planning team members will need to identify community specific goals, actions, and assessment strategies; coordinate individual property owner vs. agency roles and responsibilities; define project priorities and funding sources; plus develop timetables for implementation and success measurements.

Emergency Preparedness

- Develop more detailed and localized CWPPs for the 3 incorporated cities, 24 individual community council areas and other populated regions in the MSB.
- Create a wildfire response plan and maps to be used by fire suppression/emergency response personnel during a wildfire emergency.
- Develop GIS data for a wildfire response map including: vegetation/fuel typing, hazard and risk ratings, locations of completed hazard fuel reduction projects, ingress/egress routes, values at risk, safety zones, water drafting sites, fire tool cache locations and helispot locations.
- Obtain low-level, color, stereo aerial photography for areas with in the WUI that aerial photography does not currently exist; this aerial photography will be used for vegetation mapping and to support individual community CWPP preparation.
- Create community evacuation plans that contain information regarding evacuation routes, shelters and safety zones.
- Identify populated areas without adequate ingress/egress and correct the issue(s).
- Continue to improve coordination between MSB Department of Emergency Services, AK-DOF, Alaska State Troopers and local law enforcement/emergency response agencies.
- Identify emergency response resource needs and maintain a baseline level of equipment, personnel and training to provide adequate fire protection.
- Develop a public notification system for emergencies; including an alternate telephone calling system and website page for emergency information.
- Improve and/or develop ordinances within the MSB Code to better protect the public against the threat of wildfire.

Public Education

- Educate community members on CWPP development and seek their involvement.
- Merge existing websites into one well designed website to provide information about CWPPs, FireWise, and Fuel Reduction efforts.
- Continue encouraging residents to protect their homes and properties by providing free FireWise home site visits emphasizing defensible space among other FireWise principles.
- Promote the MSB Cost Share Program for treatment of home defensible space and inform residents of the free wood disposal site locations.
- Develop partnerships with the MSB School District and community libraries to promote FireWise and wildfire prevention education

- Provide homeowners with fire prevention and planning information.
- Educate residents about existing escape routes and (or) safety zones.
- Contact absentee landowners and encourage their involvement in fire prevention.
- Provide education on shelter-in-place vs. evacuation procedures.
- Increase signage and advertising to remind the public of the wildfire danger posed by fireworks. (figure 11)



Figure 11 - Educational Signage

Hazard Fuel Reduction

- Complete development of GIS datasets (vegetation/fuel types, fire hazard, fire risk, etc) to better prioritize locations for fuel reduction projects.
- Continue collaborating with various property owners (private, tribal, government, etc.) to accomplish fuel reduction projects.
- Continue contracting local companies and AK-DOF crews to perform fuel reduction treatment by cutting, chipping, shredding, mulching or burning using mechanical or hand labor methods and remove excess and hazardous vegetation from treatment sites.
- Authorize and coordinate controlled burning with the AK-DOF in Palmer.

Declaration of Agreement and Concurrence

The following representatives have reviewed this Matanuska-Susitna Borough umbrella Community Wildfire Protection Plan and support efforts to reduce the threat of wildfires, improve wildfire preparedness and expand wildfire education.

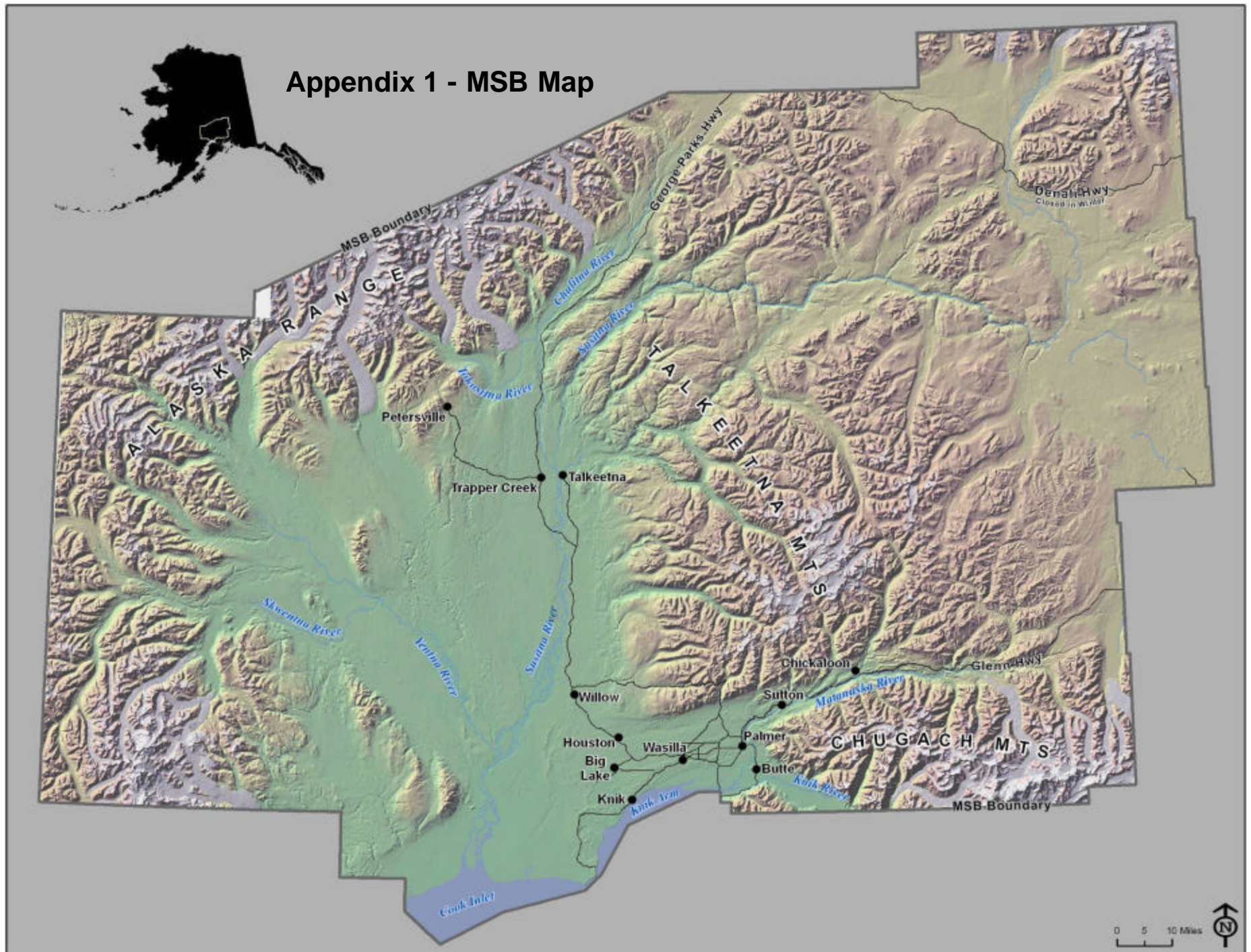
Dennis Brodigan, Emergency Services Director
Matanuska-Susitna Borough

Ken Bullman, Forester IV
Alaska Division of Forestry – Alaska Department of Natural Resources

Rocky Jones, President
Mat-Su Fire Chiefs Association

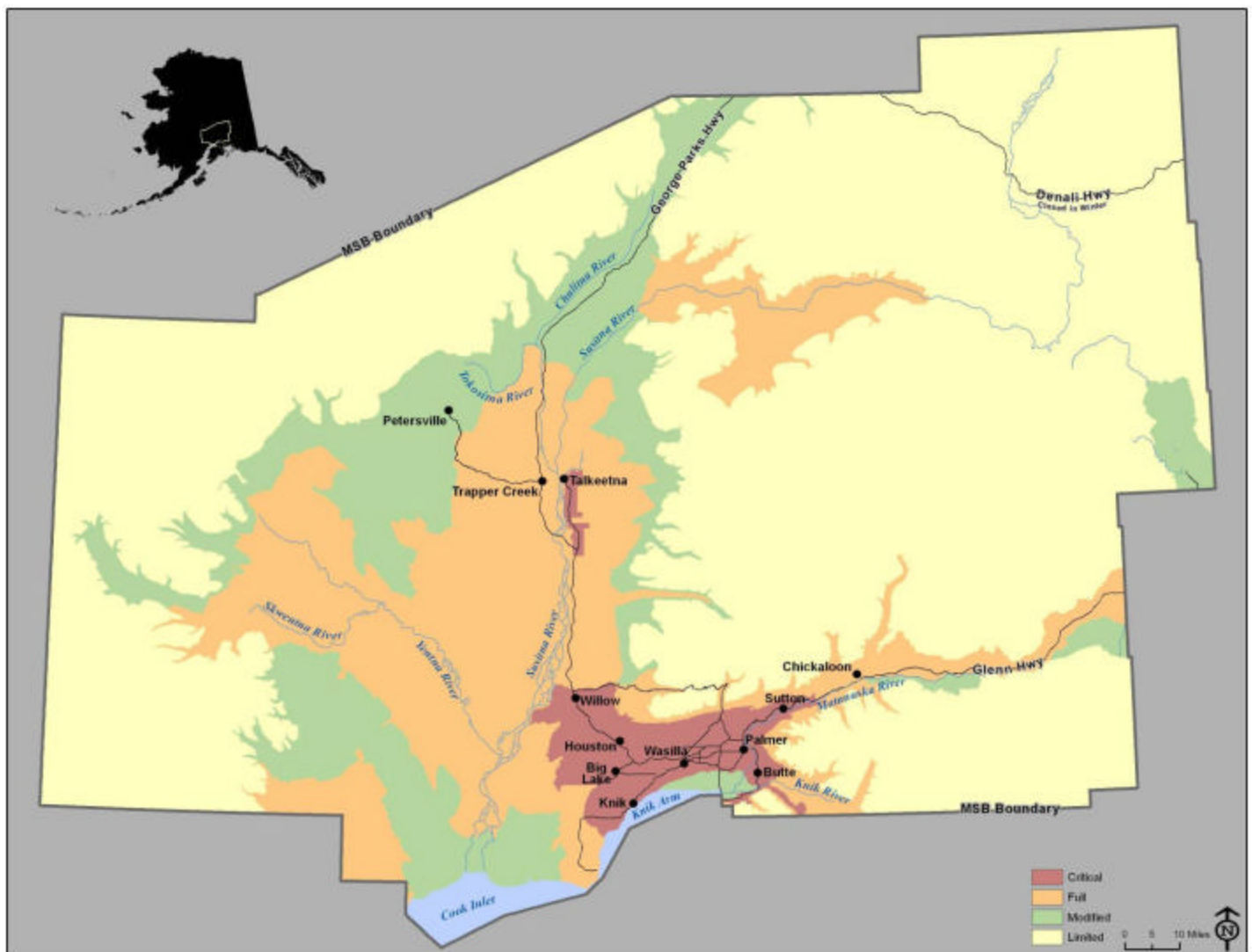
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Appendix 1 - MSB Map



Appendix 2 - AK-DOF Fire Protection Designations / Map

Critical Protection	Suppression action provided on a wildland fire that threatens human life, inhabited property, designated physical developments and structural resources such as those designated as National Historic Landmarks. The suppression objective is to provide complete protection to identified sites and control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires threatening critical sites is given the highest priority.
Full Protection	Suppression action provided on a wildland fire that threatens uninhabited private property, high-valued natural resource areas, and other high-valued areas such as identified cultural and historical sites. The suppression objective is to control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires receiving the full protection option is second in priority only to fires threatening a critical protection area.
Modified Protection	Suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of full protection. The suppression objective is to reduce overall suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the modified protection option is of a lower priority than those in critical and full protection areas. A higher level of protection may be given during the peak burning periods of the fire season than early or late in the fire season.
Limited Protection	Lowest level of suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of a higher level of protection, and where opportunities can be provided for fire to help achieve land and resource protection objectives. The suppression objective is to minimize suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the limited protection option is of the lowest priority. Surveillance is an acceptable suppression response as long as higher valued adjacent resources are not threatened.



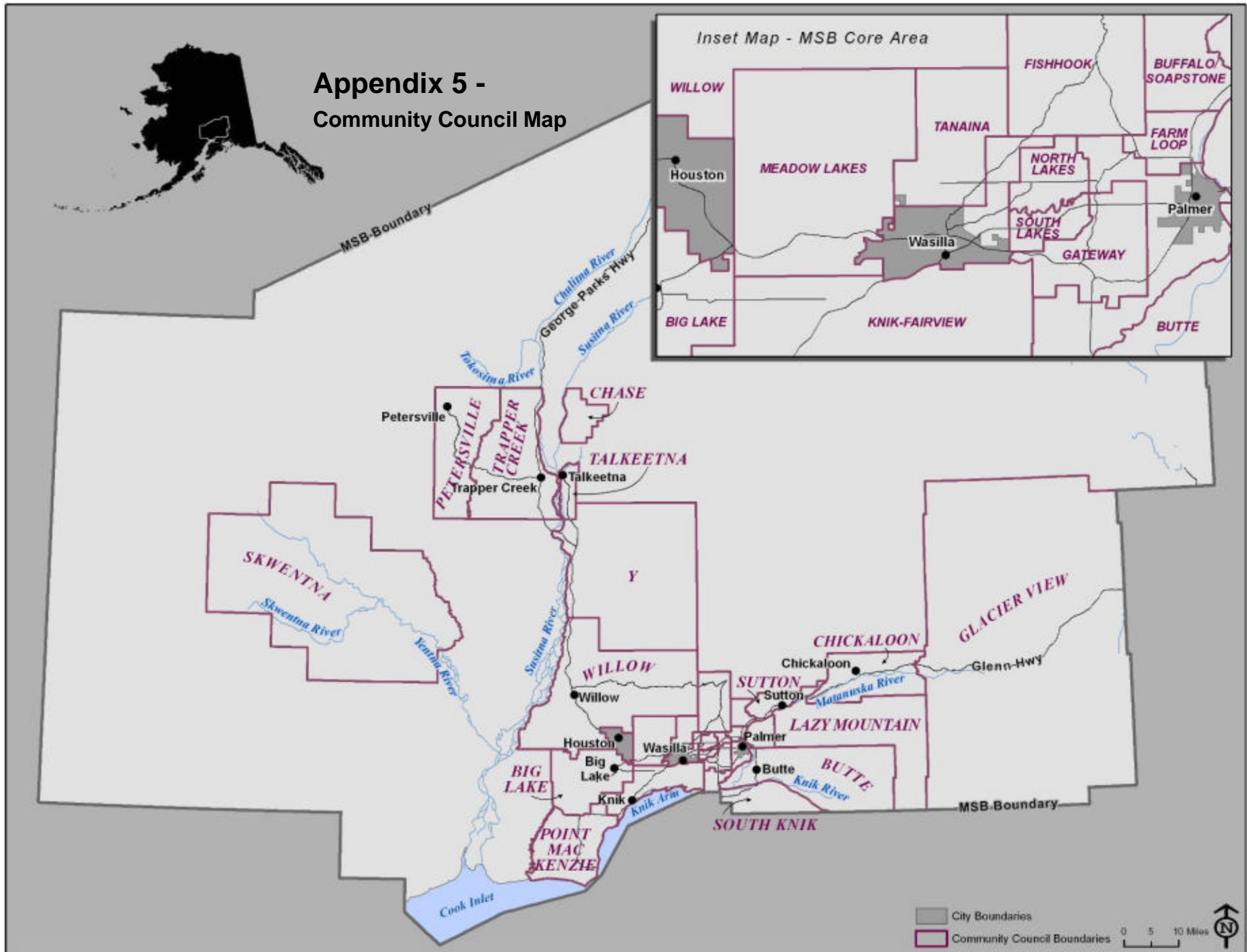
Appendix 3 - Critical Facilities / Values at Risk

TYPE	VALUE
Population	77,174 (2006 DOL Estimate)
Structures	30987 Structures
Emergency Response Infrastructure	Public Safety Buildings (aka Fire/EMT Stations) (26 count) AK-DOF Palmer Facility (1 count) City Police Stations (3 count) Correctional Facilities (3 count) Alaska State Trooper Posts (3 count) Food Bank (1 count) Hospital (1 count)
Other Critical Infrastructure	Main MSB Government Building (1 count) Schools (40 count) Community Centers (5 count) Senior Centers (5 count) Libraries (7 count) City Halls (3 count) Post Offices (14 count) Dozens of additional administrative and maintenance buildings for city, borough and state functionality.
Transportation Infrastructure	Highways: Glenn Highway (107 miles); Parks Highway (167 miles); Denali Highway (70 miles) <i>summer only</i> Other Roads: Major Roads (210 miles); Medium Roads (155 miles); Minor Roads (1530 miles); Primitive Roads/Trails (62 miles); Private Roads (36 miles) Alaska Railroad (190 miles) Aircraft Landing Sites (137 count - including private air strips)
Utility Infrastructure	Natural Gas Telecommunication Electric Water
Recreational Sites & Trails Sites that don't fall entirely within the MSB boundary are in <i>italics</i> , acreage listed includes only the area within the MSB. All acreage is approximate.	<i>Denali National Park and Preserve</i> (1,677,600 acres), <i>Chugach National Forest</i> (45,800 acres), Denali State Park (325,300 acres), Nancy Lake State Recreation Area (22,700 acres), Hatcher Pass State Management Area (230,000 acres), Other State Recreation Sites and Areas (18 count), State Game Refuges (4 w/ 338,600 acres total), State Moose Range (1 w/ 131,700 acres total), State Critical Habitat Area (1 w/ 22,600 acres), State Recreational Mining Areas (2 w/ 700 acres total), State Public Use Areas (2 w/ 2,275,300 acres total), <i>National Wild & Scenic River</i> (1 count), State Recreational Rivers (6 count), Other Public Parks (city, borough, etc) (20 count), Documented or Reserved Trails (>2000 miles)
Cultural Sites	National Register Historic Districts (5) National Register Other Sites (22) Additional Documented Sites (>300)
Natural Resources	Gravel, Timber, Coal, Gold Fish Habitat / Anadromous Streams Wildlife – 3 State Refuge Areas, 1 State Critical Habitat Area

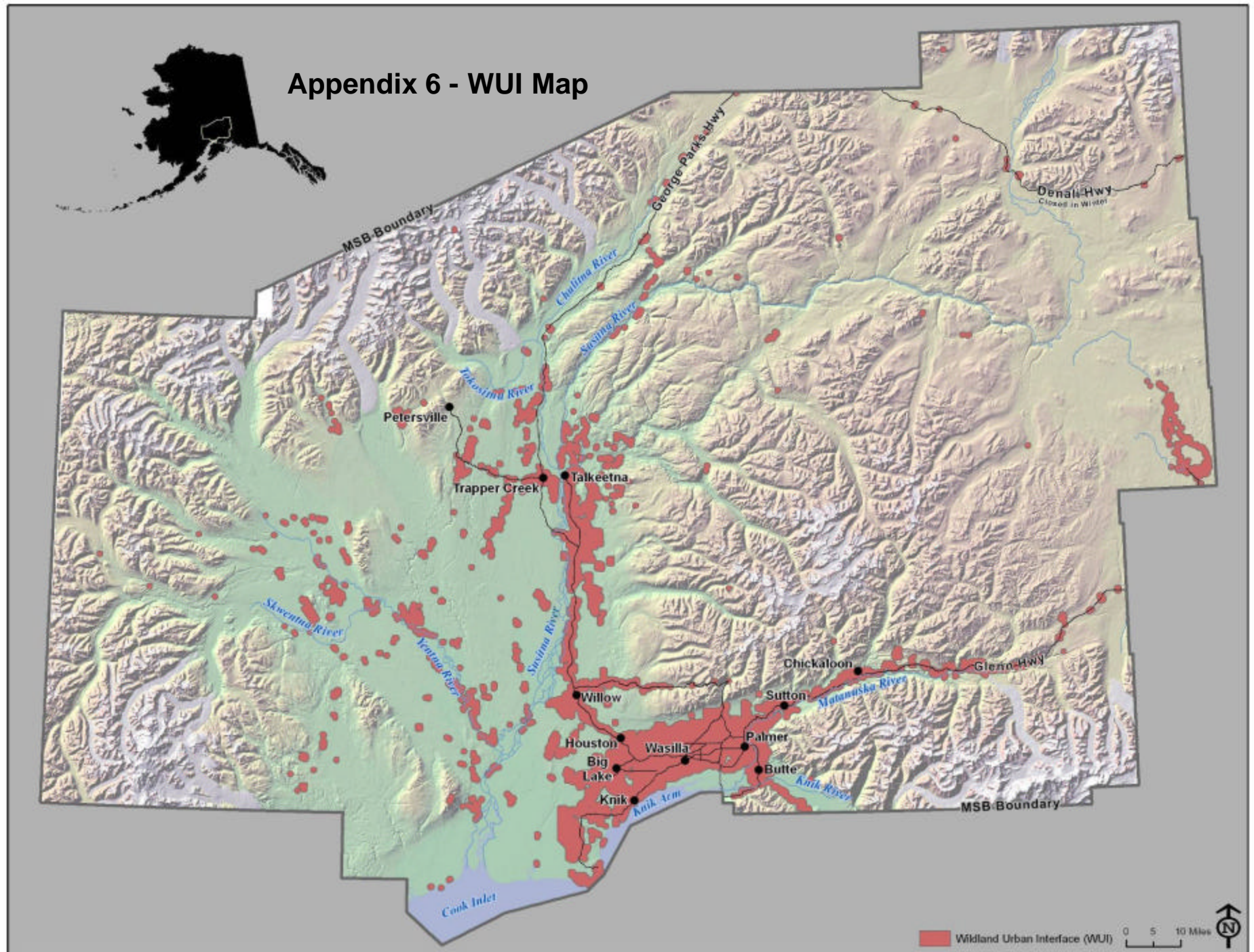
Appendix 4 - All Hazard Plan Survey Results

MITIGATION MEASURES AND SURVEY RESPONSES	% IN FAVOR	% NO OPINION OR NO RESPONSE
ALL HAZARDS		
Make hazard mitigation part of every land use proposal	45.18%	29.42%
Increase recruitment, incentives, and training for emergency response personnel	75.65%	18.23%
Adopt building codes	59.15%	20.67%
Restrict construction in areas with high risk for natural hazards such as flooding, erosion, or landslide	73.91%	15.37%
Institute a program similar to the Anchorage AWARE citizen emergency response program	48.53%	44.64%
SEVERE WEATHER		
Encourage the use of weather resistant building practices	68.13%	24.62%
FLOOD		
Increase accuracy of floodplain mapping	68.40%	25.49%
identify and replace undersized culverts at road crossings	75.65%	19.48%
FIRE		
Encourage the creation of firebreaks	77.60%	16.78%
Promote FireWise building practices	76.80%	18.67%
Clear spruce bark beetle killed standing deadwood	81.12%	13.79%
AVALANCHE		
Support an aggressive avalanche education program	63.74%	25.49%

Appendix 5 - Community Council Map



Appendix 6 - WUI Map



Appendix 7 - MSB Wildfire Causes

Created from AK-DOF Fire Starts Dataset 1990-2006

Cause	Count	Percent
Human	1768	96%
Lighting	56	3%
Unknown	23	1%

Human Cause	Count	Percent
Trash Burn	216	12.22%
Other	185	10.46%
Land Clearing	175	9.90%
Children	154	8.71%
Slash Burn	139	7.86%
Debris Burning	133	7.52%
Campfire	105	5.94%
Burning Building	100	5.66%
Power line	95	5.37%
Field Burn	89	5.03%
Fireworks	88	4.98%
Smoking	52	2.94%
Vehicle	45	2.55%
Warming Fire	36	2.04%
Camping	28	1.58%
Cooking Fire	22	1.24%
Miscellaneous	14	0.79%
Structure	14	0.79%
Incendiary	12	0.68%
Pyromania	9	0.51%
Exhaust	8	0.45%
Insect Control	7	0.40%
Arson	6	0.34%
Equipment	6	0.34%
Recurrent	6	0.34%
Flue Sparks	5	0.28%
Row Burning	5	0.28%
Burning Dump	4	0.23%
Aircraft	2	0.11%
Brakeshoe	2	0.11%
Grudge Fire	1	0.06%
Line Const	1	0.06%
Logging	1	0.06%
Power Saw	1	0.06%
Railroad	1	0.06%
Rep Game	1	0.06%

Appendix 8 - Initial Wildfire Attack Resources

Alaska Department of Forestry, Initial Attack Resources, Mat-Su Region

Apparatus

- (4) Engines – Type 3
- (3) Engines – Type 6
- (2) Engines – Type 7
- (1) Water Tender

Aircraft

- (1-2) Air Tankers – Type 1
- (1-2) Helicopters – Type 2

Fire Crews

- Pioneer Peak – Type 1
- Gannet Glacier – Type 2

Fire Suppression Personal

- (14) Fire Suppression Technicians
- (2) Fire Suppression Foreman
- (1) Fire Manager Officer
- (1) Area Forester

MSB Firefighting Resources

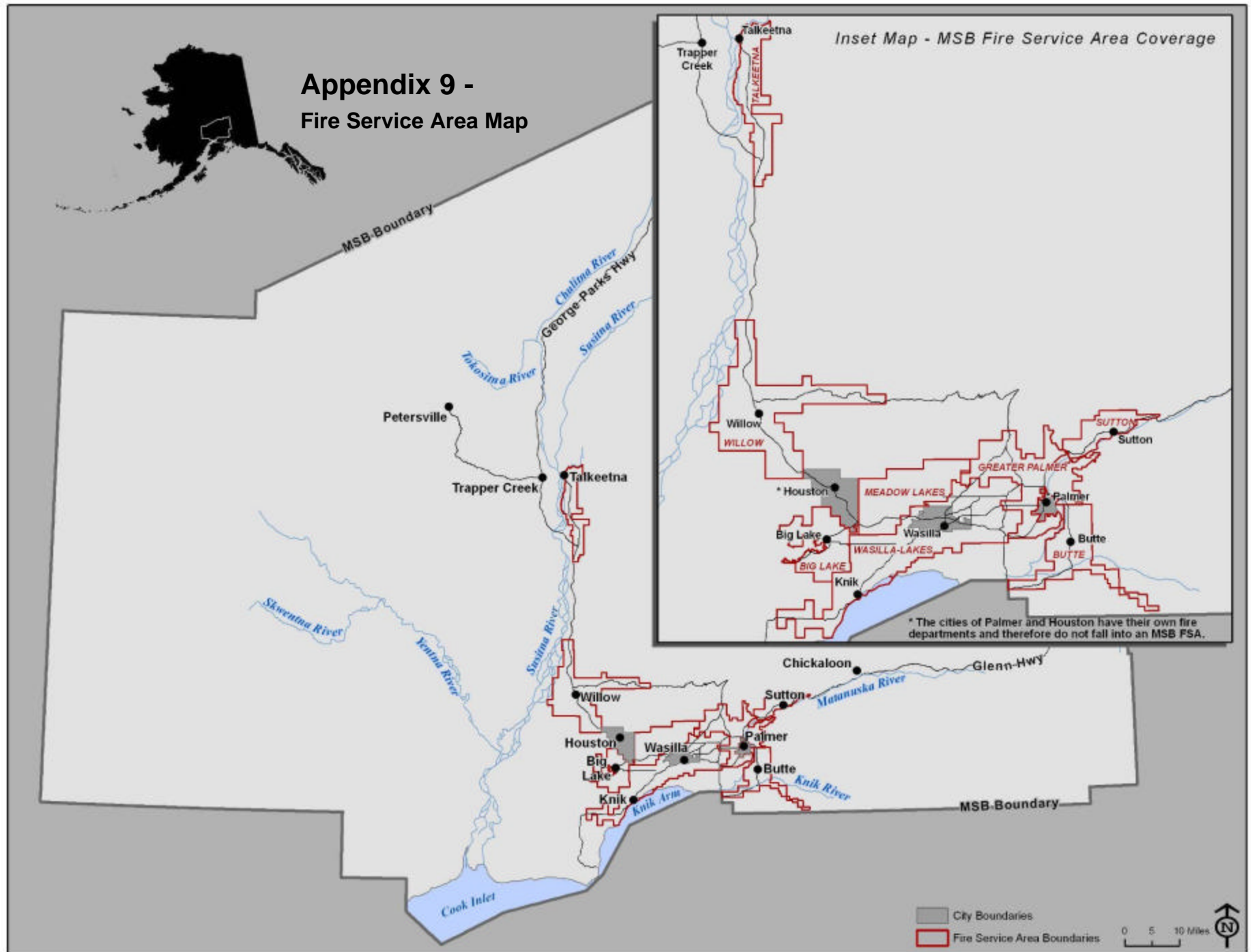
Stations	26	
Apparatus		
Engines	30	
Total Gallons		29,900
Tankers	30	
Total Gallons		72,050
Brush Trucks	18	
Total Gallons		5,295
Ambulances	17	

Emergency Response Personnel¹¹

Total	455
Firefighters	322
Medics	237

¹¹ Many personnel are trained as both firefighters and medics, therefore adding together the number of firefighters and medics does not match the total number of personnel.

Appendix 9 - Fire Service Area Map



Appendix 10 - Glossary

Boreal Forest - a broad band of sub-arctic, mixed forest dominated by spruce, aspen, and birch with areas of muskeg, stretching across northern North America, Europe, and Asia.

Burning Ban - A declared ban on open air burning within a specified area, usually due to sustained high fire danger.

Community Councils - are nonprofit, voluntary, self-governing associations composed of residents located within geographical areas designated as community council districts by the assembly.

Cooperative Agreements - Written documents made between unlike governmental bodies (for example state and federal) to provide assistance in terms of emergencies.

Critical Protection - Suppression action provided on a wildland fire that threatens human life, inhabited property, designated physical developments and structural resources such as those designated as National Historic Landmarks. The suppression objective is to provide complete protection to identified sites and control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires threatening critical sites is given the highest priority.

Crown Fire - Any fire that advances from top to top of trees or brush that is more or less independent of the surface fire.

Defensible Space – a clean zone where fuels have been cleared, reduced or changed to act as a barrier between an advancing wildfire and property to be protected. Defensible space usually is a 30 foot wide vegetation management zone around a structure, although fuels should be thinned beyond the first zone in high risk areas.

Evacuation - An organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care in safe areas.

Extreme Fire Behavior - When a wildland fire is influenced by adverse winds, fuels, adverse topography, or any combination of the above. High rates of spread, spotting, and thermal outputs are associated with extreme fire behavior.

Fire Behavior - The manner in which a wildland fire reacts to the influences of fuel, weather, and topography; how fuels ignite, flames develop, and fires spread.

Fire Break - An existing barrier, man-made or natural, that will stop or slow an oncoming wildland fire.

Fire Hazard - A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control.

Fire Prevention - Activities such as public education, community outreach, law enforcement, and reduction of fuel hazards that are intended to reduce wildland fire and the risks it poses to life and property.

Fire Risk – The chance of fire starting, as determined by the presence and activity of causative agents.

Fire Risk Rating - Evaluation of a dwelling and its immediate surrounding to determine its potential to escape damage by an approaching wildland fire. Includes the fuels and vegetation in the yard and adjacent to the structure, roof environment, decking and siding materials, prevailing winds, topography, fire history, etc., with the intent of mitigating fire hazards and risks. Also called a Home Assessment.

Fire Season – 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resources values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by federal, state or local authority.

Fire Suppression - The work of containing or fighting a wildfire, beginning with its discovery and continuing until the fire is extinguished and mop-up is completed.

Fuel Group - An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics. General fuel groups are grass, brush, timber, and slash.

Fuel Loading - The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available fuel (consumable fuel) or total fuel and is usually dry weight.

Fuel Management - Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

Fuel Model 1 - Simulated fuel complex for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Mitigation - Manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling and burning). synonym: Fuel Treatment Fuel Modification or Fuel Reduction

Fuel Type - An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.

Fuelbreak - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Full Protection - Suppression action provided on a wildland fire that threatens uninhabited private property, high-valued natural resource areas, and other high-valued areas such as identified cultural and historical sites. The suppression objective is to control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires receiving the full protection option is second in priority only to fires threatening a critical protection area.

GIS – Geographical Information Systems, a computer application used to store, view, and analyze geographical information and create maps.

Hand Crew - A number of individuals that have been organized and trained and are supervised principally for operational assignments on an incident.

Hazard Assessment - Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss, cost, or strategic degradation based on probability and severity.

Hazard Fuel - A fuel complex defined by kind, arrangement, volume, condition, and location that forms a special threat of ignition and resistance to control.

Ignition Risk – the probability of fire to start or spread at a specific location.

Limited Protection - Lowest level of suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of a higher level of protection, and where opportunities can be provided for fire to help achieve land and resource protection objectives. The suppression objective is to minimize suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the limited protection option is of the lowest priority. Surveillance is an acceptable suppression response as long as higher valued adjacent resources are not threatened.

Mitigation - Those activities implemented prior to, during, or after an incident which are designed to reduce or eliminate risks to persons or property that lessen the actual or potential effects or consequences of an incident. Mitigation measures can include efforts to educate governments, businesses, and the general public on measures they can take to reduce loss and injury and are often informed by lessons learned from prior incidents.

Modified Protection - Suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of full protection. The suppression objective is to reduce overall suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the modified protection option is of a lower priority than those in critical and full protection areas. A higher level of protection may be given during the peak burning periods of the fire season than early or late in the fire season.

Muskeg - A swamp or bog formed by an accumulation of sphagnum moss, leaves, and decayed matter resembling peat.

Mutual Aid – 1) Assistance in firefighting or investigation by fire agencies, without regard for jurisdictional boundaries. 2) An agreement made between like governmental bodies (such as federal, state and municipal) to provide assistance to each other in times of emergencies.

Preparedness – 1) Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination. 2) Mental readiness to recognize changes in fire danger and act promptly when action is appropriate. 3) The range of deliberate, critical tasks, and activities necessary to build, sustain, and improve the capability to protect against, respond to, and recover from domestic incidents.

Prevention – 1) Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards (fuels management). 2) Actions to avoid an incident, to intervene for the purpose of stopping an incident from occurring, or to mitigate an incident's effect to protect life and property. Includes measures designed to mitigate damage by reducing or eliminating risks to persons or property, lessening the potential effects or consequences of an incident.

Response – 1) Movement of an individual firefighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm. 2) Activities that address the short-term, direct effect of an incident, including immediate actions to save lives, protect property, and meet basic human needs.

Safety Zone - An area cleared of flammable materials used for escape in the event an area outflanked by wildfire. Safety zones may also be constructed as integral parts of fuelbreaks.

Shaded Fuelbreak – forested areas where tree density has been thinned and the remaining trees pruned to reduce the fire potential. Some crown canopy is retained to make a less favorable microclimate for surface fires.

Slash - Debris resulting from such natural events as wind, fire, or snow breakage; or such human activities as road construction, logging, pruning, thinning, or brush cutting. It includes logs, chunks, bark, branches, stumps, and broken understory trees or brush.

Suppression - All the work of extinguishing or confining a fire beginning with its discovery.

Surface Fire - A fire that burns surface litter like dry pine needles and leaves.

Topography - An accurate and detailed description of a place, including land surface configuration, both man-made and natural. Topography can be described in terms like "level", "steep", "broken", or "rolling".

Values At Risk - Include property, structures, physical improvements, natural and culture resources, community infrastructure, and economic, environmental, and social values.

Wildfire/Wildland Fire - Any fire which threatens to destroy life, property, or natural resources, and (a) is not burning within the confines of firebreaks, or (b) is burning with such intensity that it could not be readily extinguished with ordinary tools commonly available.

Wildfire Suppression - An appropriate management response to wildfire, escaped wildland fire or prescribed fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire.

Wildland - An area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered.

Wildland Urban Interface (WUI) - The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.